



07/30/14

Technical Report for

Stantec Consulting Services Inc.

Sunoco - Marcus Hook Facility, PA

213402353

Accutest Job Number: JB48100

Sampling Dates: 09/19/13 - 09/20/13

Report to:

Stantec

Lisa.Votta@stantec.com

ATTN: Lisa Votta

Total number of pages in report: 62



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads 'Nancy F. Cole'.

Nancy Cole
Laboratory Director

Client Service contact: Marie Meidhof 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV, DoD ELAP (L-A-B L2248)

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Test results relate only to samples analyzed.

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Sample Summary

Stantec Consulting Services Inc.

Job No: JB48100

Sunoco - Marcus Hook Facility, PA
Project No: 213402353

Sample Number	Collected			Received	Matrix		Client Sample ID
	Date	Time	By		Code	Type	
JB48100-1	09/19/13	14:55	JC	09/20/13	SO	Soil	MH455-1A(0.0-2.0)
JB48100-2	09/19/13	15:05	JC	09/20/13	SO	Soil	MH435-1A(2.5-3.0)
JB48100-3	09/20/13	08:10	JC	09/20/13	SO	Soil	MH455-2A(0.0-2.0)
JB48100-4	09/20/13	08:20	JC	09/20/13	SO	Soil	MH455-2A(2.75-3.25)
JB48100-5	09/20/13	09:05	JC	09/20/13	SO	Soil	MH455-3A(0.0-2.0)
JB48100-6	09/20/13	09:10	JC	09/20/13	SO	Soil	MH455-3A(5.5-6.0)
JB48100-7	09/20/13	09:50	JC	09/20/13	SO	Soil	MH455-4A(0.0-2.0)
JB48100-8	09/20/13	10:00	JC	09/20/13	SO	Soil	MH455-4A(3.5-4.0)
JB48100-9	09/20/13	10:25	JC	09/20/13	AQ	Field Blank Soil	FB09202013

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Stantec Consulting Services Inc.**Job No** JB48100**Site:** Sunoco - Marcus Hook Facility, PA**Report Date** 10/24/2013 3:45:24 P

On 09/20/2013, 8 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at Accutest Laboratories at a temperature of 3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB48100 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ**Batch ID:** V2C5157

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB47929-5MS, JB47929-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO**Batch ID:** V2C5161

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB48050-6MS, JB48050-6MSD were used as the QC samples indicated.
- JB48100-8: Dilution required due to matrix interference.
- JB48100-7: Dilution required due to matrix interference.

Matrix: SO**Batch ID:** VY5989

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB48100-6DUP, JB48220-1MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO**Batch ID:** VY5999

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB48379-10MS, JB48379-10MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO**Batch ID:** VY6003

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB48704-1AMS, JB48704-1AMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB48704-1AMSD for Dibromofluoromethane: Outside control limits due to matrix interference.

Extractables by GCMS By Method SW846 8270D

Matrix: AQ

Batch ID: OP69236

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: SO

Batch ID: OP69235

- All samples were extracted within the recommended method holding time.
- Sample(s) JB48100-1MS, JB48100-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB48100-7 for Nitrobenzene-d5: Outside of in house control limits, but within reasonable method recovery limits.
- OP69235-MB1 for 2-Fluorobiphenyl: Outside of in house control limits, but within reasonable method recovery limits.

Volatiles by GC By Method SW846 8011

Matrix: AQ

Batch ID: M:OP35070

- The data for SW846 8011 meets quality control requirements.
- JB48100-9: Analysis performed at Accutest Laboratories, Marlborough, MA.

Matrix: SO

Batch ID: M:OP35073

- The data for SW846 8011 meets quality control requirements.
- JB48100-8: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB48100-7: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB48100-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB48100-5: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB48100-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB48100-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB48100-6: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB48100-4: Analysis performed at Accutest Laboratories, Marlborough, MA.

Metals By Method SW846 6010C

Matrix: AQ

Batch ID: MP74794

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: SO

Batch ID: MP75013

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB48042-1MS, JB48042-1MSD, JB48042-1SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Lead are outside control limits. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- JB48100-3 for Vanadium: Elevated detection limit due to dilution required for high interfering element.
- JB48100-3 for Nickel: Elevated detection limit due to dilution required for high interfering element.
- JB48100-3 for Lead: Elevated detection limit due to dilution required for high interfering element.
- MP75013-SD1 for Zinc: Serial dilution indicates possible matrix interference.

Wet Chemistry By Method SM2540 G-97

Matrix: SO

Batch ID: GN92046

- The data for SM2540 G-97 meets quality control requirements.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest New Jersey

Job No JB48100

Site: SECORPAE: Sunoco - Marcus Hook Facility, PA

Report Date 10/4/2013 2:38:38 PM

8 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were collected on between 09/19/2013 and 09/20/2013 and were received at Accutest on 09/20/2013 properly preserved, at 0.9 Deg. C and intact. These Samples received an Accutest job number of JB48100. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GC By Method SW846 8011

Matrix: AQ

Batch ID: OP35070

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24800-9MS, MC24800-9MSD were used as the QC samples indicated.

Matrix: SO

Batch ID: OP35073

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB48100-8MS, JB48100-8MSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report (JB48100).

Summary of Hits

Job Number: JB48100
Account: Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Collected: 09/19/13 thru 09/20/13

Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
JB48100-1	MH455-1A(0.0-2.0)					
Cobalt		6.4	5.9	0.077	mg/kg	SW846 6010C
Lead		205	2.3	0.25	mg/kg	SW846 6010C
Nickel		13.5	4.7	0.093	mg/kg	SW846 6010C
Vanadium		31.0	5.9	0.086	mg/kg	SW846 6010C
Zinc		75.4	2.3	0.27	mg/kg	SW846 6010C
JB48100-2	MH435-1A(2.5-3.0)					
Cobalt		4.5 B	6.1	0.080	mg/kg	SW846 6010C
Lead		6.1	2.4	0.26	mg/kg	SW846 6010C
Nickel		11.0	4.8	0.096	mg/kg	SW846 6010C
Vanadium		14.4	6.1	0.088	mg/kg	SW846 6010C
Zinc		26.7	2.4	0.28	mg/kg	SW846 6010C
JB48100-3	MH455-2A(0.0-2.0)					
Cobalt		9.0	5.8	0.076	mg/kg	SW846 6010C
Lead ^a		235	23	2.5	mg/kg	SW846 6010C
Nickel ^a		64.2	23	0.46	mg/kg	SW846 6010C
Vanadium ^a		23.7 B	29	0.42	mg/kg	SW846 6010C
Zinc		157	2.3	0.27	mg/kg	SW846 6010C
JB48100-4	MH455-2A(2.75-3.25)					
Cobalt		5.7 B	6.4	0.085	mg/kg	SW846 6010C
Lead		7.7	2.6	0.27	mg/kg	SW846 6010C
Nickel		11.9	5.1	0.10	mg/kg	SW846 6010C
Vanadium		18.9	6.4	0.094	mg/kg	SW846 6010C
Zinc		48.4	2.6	0.30	mg/kg	SW846 6010C
JB48100-5	MH455-3A(0.0-2.0)					
Cobalt		7.3	6.0	0.080	mg/kg	SW846 6010C
Lead		13.9	2.4	0.26	mg/kg	SW846 6010C
Nickel		16.2	4.8	0.095	mg/kg	SW846 6010C
Vanadium		29.5	6.0	0.088	mg/kg	SW846 6010C
Zinc		60.1	2.4	0.28	mg/kg	SW846 6010C
JB48100-6	MH455-3A(5.5-6.0)					
Cobalt		6.4	5.9	0.078	mg/kg	SW846 6010C
Lead		12.9	2.4	0.25	mg/kg	SW846 6010C
Nickel		15.8	4.7	0.093	mg/kg	SW846 6010C

Summary of Hits

Job Number: JB48100
 Account: Stantec Consulting Services Inc.
 Project: Sunoco - Marcus Hook Facility, PA
 Collected: 09/19/13 thru 09/20/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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Vanadium		30.8	5.9	0.086	mg/kg	SW846 6010C
Zinc		35.2	2.4	0.28	mg/kg	SW846 6010C

JB48100-7 MH455-4A(0.0-2.0)

Ethylbenzene ^b	90.5 J	140	36	ug/kg	SW846 8260B
Xylene (total) ^b	80.9 J	140	19	ug/kg	SW846 8260B
sec-Butylbenzene ^b	383 J	690	16	ug/kg	SW846 8260B
tert-Butylbenzene ^b	167 J	690	41	ug/kg	SW846 8260B
Cyclohexane ^b	430 J	690	17	ug/kg	SW846 8260B
Hexane ^b	1060	690	33	ug/kg	SW846 8260B
Isopropylbenzene ^b	701	690	10	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene ^b	61.8 J	690	29	ug/kg	SW846 8260B
Fluoranthene	66.1	41	18	ug/kg	SW846 8270D
2-Methylnaphthalene	1380	82	23	ug/kg	SW846 8270D
Naphthalene	371	41	11	ug/kg	SW846 8270D
Phenanthrene	92.7	41	19	ug/kg	SW846 8270D
Pyrene	99.1	41	16	ug/kg	SW846 8270D
Cobalt	10.9	6.3	0.083	mg/kg	SW846 6010C
Lead	8.1	2.5	0.27	mg/kg	SW846 6010C
Nickel	21.9	5.0	0.099	mg/kg	SW846 6010C
Vanadium	31.7	6.3	0.091	mg/kg	SW846 6010C
Zinc	67.7	2.5	0.29	mg/kg	SW846 6010C

JB48100-8 MH455-4A(3.5-4.0)

Benzene ^b	25.4 J	120	14	ug/kg	SW846 8260B
Ethylbenzene ^b	74.2 J	120	32	ug/kg	SW846 8260B
Xylene (total) ^b	89.5 J	120	17	ug/kg	SW846 8260B
sec-Butylbenzene ^b	321 J	610	14	ug/kg	SW846 8260B
tert-Butylbenzene ^b	117 J	610	36	ug/kg	SW846 8260B
Cyclohexane ^b	949	610	15	ug/kg	SW846 8260B
Hexane ^b	2290	610	29	ug/kg	SW846 8260B
Isopropylbenzene ^b	974	610	9.0	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene ^b	25.6 J	610	25	ug/kg	SW846 8260B
2-Methylnaphthalene	862	83	23	ug/kg	SW846 8270D
Naphthalene	631	41	11	ug/kg	SW846 8270D
Cobalt	10.6	5.1	0.068	mg/kg	SW846 6010C
Lead	8.7	2.1	0.22	mg/kg	SW846 6010C
Nickel	21.1	4.1	0.081	mg/kg	SW846 6010C
Vanadium	31.7	5.1	0.075	mg/kg	SW846 6010C
Zinc	60.2	2.1	0.24	mg/kg	SW846 6010C

Summary of Hits

Page 3 of 3

Job Number: JB48100

Account: Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Collected: 09/19/13 thru 09/20/13

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

JB48100-9 FB09202013

No hits reported in this sample.

- (a) Elevated detection limit due to dilution required for high interfering element.
- (b) Dilution required due to matrix interference.

Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-1A(0.0-2.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-1	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y138609.D	1	09/27/13	PS	n/a	n/a	VY5989
Run #2							

Run #	Initial Weight
Run #1	6.4 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.94	0.11	ug/kg	
108-88-3	Toluene	ND	0.94	0.098	ug/kg	
100-41-4	Ethylbenzene	ND	0.94	0.25	ug/kg	
1330-20-7	Xylene (total)	ND	0.94	0.13	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.94	0.22	ug/kg	
135-98-8	sec-Butylbenzene	ND	4.7	0.11	ug/kg	
98-06-6	tert-Butylbenzene	ND	4.7	0.28	ug/kg	
110-82-7	Cyclohexane	ND	4.7	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.94	0.13	ug/kg	
110-54-3	Hexane	ND	4.7	0.22	ug/kg	
98-82-8	Isopropylbenzene	ND	4.7	0.070	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	4.7	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	4.7	0.15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		59-130%
17060-07-0	1,2-Dichloroethane-D4	85%		65-123%
2037-26-5	Toluene-D8	113%		80-124%
460-00-4	4-Bromofluorobenzene	93%		71-132%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	MH455-1A(0.0-2.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-1	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85054.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	32.0 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	190	63	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	750	46	ug/kg	
95-48-7	2-Methylphenol	ND	75	43	ug/kg	
	3&4-Methylphenol	ND	75	48	ug/kg	
100-02-7	4-Nitrophenol	ND	370	63	ug/kg	
108-95-2	Phenol	ND	75	39	ug/kg	
83-32-9	Acenaphthene	ND	37	11	ug/kg	
120-12-7	Anthracene	ND	37	13	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	12	ug/kg	
50-32-8	Benzo(a)pyrene	ND	37	11	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	37	12	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	37	14	ug/kg	
92-52-4	1,1'-Biphenyl	ND	75	4.3	ug/kg	
218-01-9	Chrysene	ND	37	13	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	37	13	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	8.3	ug/kg	
84-66-2	Diethyl phthalate	ND	75	13	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	75	33	ug/kg	
206-44-0	Fluoranthene	ND	37	17	ug/kg	
86-73-7	Fluorene	ND	37	12	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	13	ug/kg	
91-57-6	2-Methylnaphthalene	ND	75	21	ug/kg	
91-20-3	Naphthalene	ND	37	10	ug/kg	
85-01-8	Phenanthrene	ND	37	17	ug/kg	
129-00-0	Pyrene	ND	37	14	ug/kg	
110-86-1	Pyridine	ND	75	15	ug/kg	
91-22-5	Quinoline	ND	190	35	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		13-110%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MH455-1A(0.0-2.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-1	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	74%		15-110%
118-79-6	2,4,6-Tribromophenol	81%		20-123%
4165-60-0	Nitrobenzene-d5	79%		10-110%
321-60-8	2-Fluorobiphenyl	100%		17-110%
1718-51-0	Terphenyl-d14	94%		30-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-1A(0.0-2.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-1	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84379.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.1 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	3.0	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	127%		61-167%
460-00-4	Bromofluorobenzene (S)	108%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-1A(0.0-2.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-1	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.5
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	6.4	5.9	0.077	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Lead	205	2.3	0.25	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Nickel	13.5	4.7	0.093	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Vanadium	31.0	5.9	0.086	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Zinc	75.4	2.3	0.27	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA32306

(2) Prep QC Batch: MP75013

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 1

Client Sample ID:	MH435-1A(2.5-3.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-2	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.8
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y138610.D	1	09/27/13	PS	n/a	n/a	VY5989
Run #2							

Run #	Initial Weight
Run #1	6.3 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.97	0.12	ug/kg	
108-88-3	Toluene	ND	0.97	0.10	ug/kg	
100-41-4	Ethylbenzene	ND	0.97	0.26	ug/kg	
1330-20-7	Xylene (total)	ND	0.97	0.13	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.97	0.23	ug/kg	
135-98-8	sec-Butylbenzene	ND	4.9	0.11	ug/kg	
98-06-6	tert-Butylbenzene	ND	4.9	0.29	ug/kg	
110-82-7	Cyclohexane	ND	4.9	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.97	0.13	ug/kg	
110-54-3	Hexane	ND	4.9	0.23	ug/kg	
98-82-8	Isopropylbenzene	ND	4.9	0.072	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	4.9	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	4.9	0.16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		59-130%
17060-07-0	1,2-Dichloroethane-D4	82%		65-123%
2037-26-5	Toluene-D8	112%		80-124%
460-00-4	4-Bromofluorobenzene	91%		71-132%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	MH435-1A(2.5-3.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-2	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.8
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85055.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	200	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	790	48	ug/kg	
95-48-7	2-Methylphenol	ND	79	45	ug/kg	
	3&4-Methylphenol	ND	79	50	ug/kg	
100-02-7	4-Nitrophenol	ND	400	67	ug/kg	
108-95-2	Phenol	ND	79	42	ug/kg	
83-32-9	Acenaphthene	ND	40	12	ug/kg	
120-12-7	Anthracene	ND	40	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	40	15	ug/kg	
92-52-4	1,1'-Biphenyl	ND	79	4.6	ug/kg	
218-01-9	Chrysene	ND	40	13	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	79	8.8	ug/kg	
84-66-2	Diethyl phthalate	ND	79	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	79	35	ug/kg	
206-44-0	Fluoranthene	ND	40	18	ug/kg	
86-73-7	Fluorene	ND	40	13	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	40	14	ug/kg	
91-57-6	2-Methylnaphthalene	ND	79	22	ug/kg	
91-20-3	Naphthalene	ND	40	11	ug/kg	
85-01-8	Phenanthrene	ND	40	18	ug/kg	
129-00-0	Pyrene	ND	40	15	ug/kg	
110-86-1	Pyridine	ND	79	16	ug/kg	
91-22-5	Quinoline	ND	200	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		13-110%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH435-1A(2.5-3.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-2	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.8
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	72%		15-110%
118-79-6	2,4,6-Tribromophenol	74%		20-123%
4165-60-0	Nitrobenzene-d5	81%		10-110%
321-60-8	2-Fluorobiphenyl	96%		17-110%
1718-51-0	Terphenyl-d14	99%		30-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH435-1A(2.5-3.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-2	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.8
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84380.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.1 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	3.0	1.1	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	135%		61-167%		
460-00-4	Bromofluorobenzene (S)	119%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH435-1A(2.5-3.0)	Date Sampled:	09/19/13
Lab Sample ID:	JB48100-2	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.8
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	4.5 B	6.1	0.080	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Lead	6.1	2.4	0.26	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Nickel	11.0	4.8	0.096	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Vanadium	14.4	6.1	0.088	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Zinc	26.7	2.4	0.28	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA32306

(2) Prep QC Batch: MP75013

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-2A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-3	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	85.1
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y138611.D	1	09/27/13	PS	n/a	n/a	VY5989
Run #2							

Run #	Initial Weight
Run #1	5.0 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.2	0.14	ug/kg	
108-88-3	Toluene	ND	1.2	0.12	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.31	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.16	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.28	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.9	0.13	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.9	0.35	ug/kg	
110-82-7	Cyclohexane	ND	5.9	0.15	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.16	ug/kg	
110-54-3	Hexane	ND	5.9	0.28	ug/kg	
98-82-8	Isopropylbenzene	ND	5.9	0.087	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.9	0.25	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.9	0.19	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		59-130%
17060-07-0	1,2-Dichloroethane-D4	84%		65-123%
2037-26-5	Toluene-D8	112%		80-124%
460-00-4	4-Bromofluorobenzene	91%		71-132%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	MH455-2A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-3	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	85.1
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85056.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	190	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	770	47	ug/kg	
95-48-7	2-Methylphenol	ND	77	44	ug/kg	
	3&4-Methylphenol	ND	77	49	ug/kg	
100-02-7	4-Nitrophenol	ND	390	65	ug/kg	
108-95-2	Phenol	ND	77	41	ug/kg	
83-32-9	Acenaphthene	ND	39	11	ug/kg	
120-12-7	Anthracene	ND	39	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	15	ug/kg	
92-52-4	1,1'-Biphenyl	ND	77	4.5	ug/kg	
218-01-9	Chrysene	ND	39	13	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	13	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	77	8.6	ug/kg	
84-66-2	Diethyl phthalate	ND	77	13	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	77	34	ug/kg	
206-44-0	Fluoranthene	ND	39	17	ug/kg	
86-73-7	Fluorene	ND	39	13	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	13	ug/kg	
91-57-6	2-Methylnaphthalene	ND	77	22	ug/kg	
91-20-3	Naphthalene	ND	39	11	ug/kg	
85-01-8	Phenanthrene	ND	39	18	ug/kg	
129-00-0	Pyrene	ND	39	15	ug/kg	
110-86-1	Pyridine	ND	77	15	ug/kg	
91-22-5	Quinoline	ND	190	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		13-110%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH455-2A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-3	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	85.1
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	67%		15-110%
118-79-6	2,4,6-Tribromophenol	86%		20-123%
4165-60-0	Nitrobenzene-d5	75%		10-110%
321-60-8	2-Fluorobiphenyl	93%		17-110%
1718-51-0	Terphenyl-d14	92%		30-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-2A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-3	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	85.1
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84381.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.8 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.9	1.1	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	127%		61-167%		
460-00-4	Bromofluorobenzene (S)	112%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-2A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-3	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	85.1
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	9.0	5.8	0.076	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ⁴
Lead ^a	235	23	2.5	mg/kg	10	10/03/13	10/08/13 ND	SW846 6010C ³	SW846 3050B ⁴
Nickel ^a	64.2	23	0.46	mg/kg	5	10/03/13	10/05/13 JY	SW846 6010C ²	SW846 3050B ⁴
Vanadium ^a	23.7 B	29	0.42	mg/kg	5	10/03/13	10/05/13 JY	SW846 6010C ²	SW846 3050B ⁴
Zinc	157	2.3	0.27	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA32306

(2) Instrument QC Batch: MA32321

(3) Instrument QC Batch: MA32341

(4) Prep QC Batch: MP75013

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-2A(2.75-3.25)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-4	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.0
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y138830.D	1	10/02/13	PS	n/a	n/a	VY5999
Run #2							

Run #	Initial Weight
Run #1	5.9 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.15	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.2	0.12	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.2	0.31	ug/kg	
110-82-7	Cyclohexane	ND	5.2	0.13	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
110-54-3	Hexane	ND	5.2	0.25	ug/kg	
98-82-8	Isopropylbenzene	ND	5.2	0.078	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.2	0.22	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.2	0.17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		59-130%
17060-07-0	1,2-Dichloroethane-D4	84%		65-123%
2037-26-5	Toluene-D8	112%		80-124%
460-00-4	4-Bromofluorobenzene	93%		71-132%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	MH455-2A(2.75-3.25)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-4	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.0
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85057.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	200	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	800	49	ug/kg	
95-48-7	2-Methylphenol	ND	80	46	ug/kg	
	3&4-Methylphenol	ND	80	51	ug/kg	
100-02-7	4-Nitrophenol	ND	400	68	ug/kg	
108-95-2	Phenol	ND	80	42	ug/kg	
83-32-9	Acenaphthene	ND	40	12	ug/kg	
120-12-7	Anthracene	ND	40	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	40	15	ug/kg	
92-52-4	1,1'-Biphenyl	ND	80	4.6	ug/kg	
218-01-9	Chrysene	ND	40	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	80	8.9	ug/kg	
84-66-2	Diethyl phthalate	ND	80	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	80	35	ug/kg	
206-44-0	Fluoranthene	ND	40	18	ug/kg	
86-73-7	Fluorene	ND	40	13	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	40	14	ug/kg	
91-57-6	2-Methylnaphthalene	ND	80	22	ug/kg	
91-20-3	Naphthalene	ND	40	11	ug/kg	
85-01-8	Phenanthrene	ND	40	18	ug/kg	
129-00-0	Pyrene	ND	40	15	ug/kg	
110-86-1	Pyridine	ND	80	16	ug/kg	
91-22-5	Quinoline	ND	200	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		13-110%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH455-2A(2.75-3.25)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-4	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.0
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	80%		15-110%
118-79-6	2,4,6-Tribromophenol	95%		20-123%
4165-60-0	Nitrobenzene-d5	89%		10-110%
321-60-8	2-Fluorobiphenyl	104%		17-110%
1718-51-0	Terphenyl-d14	99%		30-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-2A(2.75-3.25)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-4	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.0
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84382.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.7 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	3.0	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	129%		61-167%
460-00-4	Bromofluorobenzene (S)	114%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MH455-2A(2.75-3.25)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-4	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.0
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	5.7 B	6.4	0.085	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Lead	7.7	2.6	0.27	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Nickel	11.9	5.1	0.10	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Vanadium	18.9	6.4	0.094	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Zinc	48.4	2.6	0.30	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA32306

(2) Prep QC Batch: MP75013

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-3A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-5	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.6
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y138885.D	1	10/03/13	PS	n/a	n/a	VY6003
Run #2							

Run #	Initial Weight
Run #1	6.2 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.96	0.12	ug/kg	
108-88-3	Toluene	ND	0.96	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	0.96	0.17	ug/kg	
1330-20-7	Xylene (total)	ND	0.96	0.17	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.96	0.33	ug/kg	
135-98-8	sec-Butylbenzene	ND	4.8	0.17	ug/kg	
98-06-6	tert-Butylbenzene	ND	4.8	0.16	ug/kg	
110-82-7	Cyclohexane	ND	4.8	0.25	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.96	0.31	ug/kg	
110-54-3	Hexane	ND	4.8	0.52	ug/kg	
98-82-8	Isopropylbenzene	ND	4.8	0.14	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	4.8	0.15	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	4.8	0.21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		59-130%
17060-07-0	1,2-Dichloroethane-D4	101%		65-123%
2037-26-5	Toluene-D8	115%		80-124%
460-00-4	4-Bromofluorobenzene	100%		71-132%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	MH455-3A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-5	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.6
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85058.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	190	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	780	47	ug/kg	
95-48-7	2-Methylphenol	ND	78	44	ug/kg	
	3&4-Methylphenol	ND	78	49	ug/kg	
100-02-7	4-Nitrophenol	ND	390	66	ug/kg	
108-95-2	Phenol	ND	78	41	ug/kg	
83-32-9	Acenaphthene	ND	39	11	ug/kg	
120-12-7	Anthracene	ND	39	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	15	ug/kg	
92-52-4	1,1'-Biphenyl	ND	78	4.5	ug/kg	
218-01-9	Chrysene	ND	39	13	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	13	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	8.6	ug/kg	
84-66-2	Diethyl phthalate	ND	78	13	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	34	ug/kg	
206-44-0	Fluoranthene	ND	39	17	ug/kg	
86-73-7	Fluorene	ND	39	13	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	13	ug/kg	
91-57-6	2-Methylnaphthalene	ND	78	22	ug/kg	
91-20-3	Naphthalene	ND	39	11	ug/kg	
85-01-8	Phenanthrene	ND	39	18	ug/kg	
129-00-0	Pyrene	ND	39	15	ug/kg	
110-86-1	Pyridine	ND	78	16	ug/kg	
91-22-5	Quinoline	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		13-110%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH455-3A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-5	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.6
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	70%		15-110%
118-79-6	2,4,6-Tribromophenol	81%		20-123%
4165-60-0	Nitrobenzene-d5	81%		10-110%
321-60-8	2-Fluorobiphenyl	100%		17-110%
1718-51-0	Terphenyl-d14	102%		30-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-3A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-5	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.6
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84383.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.1 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	3.0	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	143%		61-167%
460-00-4	Bromofluorobenzene (S)	128%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-3A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-5	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	83.6
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	7.3	6.0	0.080	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³
Lead	13.9	2.4	0.26	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³
Nickel	16.2	4.8	0.095	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³
Vanadium	29.5	6.0	0.088	mg/kg	1	10/03/13	10/05/13 JY	SW846 6010C ²	SW846 3050B ³
Zinc	60.1	2.4	0.28	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³

(1) Instrument QC Batch: MA32306

(2) Instrument QC Batch: MA32321

(3) Prep QC Batch: MP75013

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-3A(5.5-6.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-6	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.3
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y138599.D	1	09/27/13	PS	n/a	n/a	VY5989
Run #2							

Run #	Initial Weight
Run #1	6.3 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.98	0.12	ug/kg	
108-88-3	Toluene	ND	0.98	0.10	ug/kg	
100-41-4	Ethylbenzene	ND	0.98	0.26	ug/kg	
1330-20-7	Xylene (total)	ND	0.98	0.14	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.98	0.23	ug/kg	
135-98-8	sec-Butylbenzene	ND	4.9	0.11	ug/kg	
98-06-6	tert-Butylbenzene	ND	4.9	0.29	ug/kg	
110-82-7	Cyclohexane	ND	4.9	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.98	0.13	ug/kg	
110-54-3	Hexane	ND	4.9	0.23	ug/kg	
98-82-8	Isopropylbenzene	ND	4.9	0.073	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	4.9	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	4.9	0.16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		59-130%
17060-07-0	1,2-Dichloroethane-D4	80%		65-123%
2037-26-5	Toluene-D8	113%		80-124%
460-00-4	4-Bromofluorobenzene	94%		71-132%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	MH455-3A(5.5-6.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-6	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.3
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85059.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	200	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	780	48	ug/kg	
95-48-7	2-Methylphenol	ND	78	45	ug/kg	
	3&4-Methylphenol	ND	78	50	ug/kg	
100-02-7	4-Nitrophenol	ND	390	66	ug/kg	
108-95-2	Phenol	ND	78	41	ug/kg	
83-32-9	Acenaphthene	ND	39	11	ug/kg	
120-12-7	Anthracene	ND	39	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	15	ug/kg	
92-52-4	1,1'-Biphenyl	ND	78	4.5	ug/kg	
218-01-9	Chrysene	ND	39	13	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	13	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	8.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	13	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	35	ug/kg	
206-44-0	Fluoranthene	ND	39	17	ug/kg	
86-73-7	Fluorene	ND	39	13	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	14	ug/kg	
91-57-6	2-Methylnaphthalene	ND	78	22	ug/kg	
91-20-3	Naphthalene	ND	39	11	ug/kg	
85-01-8	Phenanthrene	ND	39	18	ug/kg	
129-00-0	Pyrene	ND	39	15	ug/kg	
110-86-1	Pyridine	ND	78	16	ug/kg	
91-22-5	Quinoline	ND	200	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		13-110%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH455-3A(5.5-6.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-6	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.3
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	70%		15-110%
118-79-6	2,4,6-Tribromophenol	63%		20-123%
4165-60-0	Nitrobenzene-d5	74%		10-110%
321-60-8	2-Fluorobiphenyl	84%		17-110%
1718-51-0	Terphenyl-d14	90%		30-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-3A(5.5-6.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-6	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.3
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84385.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.1 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	3.1	1.1	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	137%		61-167%		
460-00-4	Bromofluorobenzene (S)	111%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-3A(5.5-6.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-6	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	81.3
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	6.4	5.9	0.078	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³
Lead	12.9	2.4	0.25	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³
Nickel	15.8	4.7	0.093	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³
Vanadium	30.8	5.9	0.086	mg/kg	1	10/03/13	10/05/13 JY	SW846 6010C ²	SW846 3050B ³
Zinc	35.2	2.4	0.28	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ³

(1) Instrument QC Batch: MA32306

(2) Instrument QC Batch: MA32321

(3) Prep QC Batch: MP75013

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-4A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-7	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	2C112100.D	1	10/02/13	DR	n/a	n/a	V2C5161
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.9 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	140	16	ug/kg	
108-88-3	Toluene	ND	140	15	ug/kg	
100-41-4	Ethylbenzene	90.5	140	36	ug/kg	J
1330-20-7	Xylene (total)	80.9	140	19	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	140	33	ug/kg	
135-98-8	sec-Butylbenzene	383	690	16	ug/kg	J
98-06-6	tert-Butylbenzene	167	690	41	ug/kg	J
110-82-7	Cyclohexane	430	690	17	ug/kg	J
107-06-2	1,2-Dichloroethane	ND	140	19	ug/kg	
110-54-3	Hexane	1060	690	33	ug/kg	
98-82-8	Isopropylbenzene	701	690	10	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	61.8	690	29	ug/kg	J
108-67-8	1,3,5-Trimethylbenzene	ND	690	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		59-130%
17060-07-0	1,2-Dichloroethane-D4	94%		65-123%
2037-26-5	Toluene-D8	92%		80-124%
460-00-4	4-Bromofluorobenzene	80%		71-132%

(a) Dilution required due to matrix interference.

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MH455-4A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-7	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85060.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	200	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	820	50	ug/kg	
95-48-7	2-Methylphenol	ND	82	47	ug/kg	
	3&4-Methylphenol	ND	82	52	ug/kg	
100-02-7	4-Nitrophenol	ND	410	69	ug/kg	
108-95-2	Phenol	ND	82	43	ug/kg	
83-32-9	Acenaphthene	ND	41	12	ug/kg	
120-12-7	Anthracene	ND	41	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	41	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	41	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	41	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	41	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	41	15	ug/kg	
92-52-4	1,1'-Biphenyl	ND	82	4.7	ug/kg	
218-01-9	Chrysene	ND	41	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	41	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	82	9.1	ug/kg	
84-66-2	Diethyl phthalate	ND	82	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	82	36	ug/kg	
206-44-0	Fluoranthene	66.1	41	18	ug/kg	
86-73-7	Fluorene	ND	41	13	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	41	14	ug/kg	
91-57-6	2-Methylnaphthalene	1380	82	23	ug/kg	
91-20-3	Naphthalene	371	41	11	ug/kg	
85-01-8	Phenanthrene	92.7	41	19	ug/kg	
129-00-0	Pyrene	99.1	41	16	ug/kg	
110-86-1	Pyridine	ND	82	16	ug/kg	
91-22-5	Quinoline	ND	200	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	83%		13-110%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH455-4A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-7	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	83%		15-110%
118-79-6	2,4,6-Tribromophenol	109%		20-123%
4165-60-0	Nitrobenzene-d5	116% ^a		10-110%
321-60-8	2-Fluorobiphenyl	106%		17-110%
1718-51-0	Terphenyl-d14	104%		30-124%

(a) Outside of in house control limits, but within reasonable method recovery limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-4A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-7	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84386.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.2 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	3.1	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	132%		61-167%
460-00-4	Bromofluorobenzene (S)	109%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-4A(0.0-2.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-7	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	80.6
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	10.9	6.3	0.083	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Lead	8.1	2.5	0.27	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Nickel	21.9	5.0	0.099	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Vanadium	31.7	6.3	0.091	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Zinc	67.7	2.5	0.29	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA32306

(2) Prep QC Batch: MP75013

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

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Client Sample ID:	MH455-4A(3.5-4.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-8	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	75.5
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	2C112101.D	1	10/02/13	DR	n/a	n/a	V2C5161
Run #2							

Run	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.3 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	25.4	120	14	ug/kg	J
108-88-3	Toluene	ND	120	13	ug/kg	
100-41-4	Ethylbenzene	74.2	120	32	ug/kg	J
1330-20-7	Xylene (total)	89.5	120	17	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	120	29	ug/kg	
135-98-8	sec-Butylbenzene	321	610	14	ug/kg	J
98-06-6	tert-Butylbenzene	117	610	36	ug/kg	J
110-82-7	Cyclohexane	949	610	15	ug/kg	
107-06-2	1,2-Dichloroethane	ND	120	16	ug/kg	
110-54-3	Hexane	2290	610	29	ug/kg	
98-82-8	Isopropylbenzene	974	610	9.0	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	25.6	610	25	ug/kg	J
108-67-8	1,3,5-Trimethylbenzene	ND	610	19	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		59-130%
17060-07-0	1,2-Dichloroethane-D4	90%		65-123%
2037-26-5	Toluene-D8	91%		80-124%
460-00-4	4-Bromofluorobenzene	83%		71-132%

(a) Dilution required due to matrix interference.

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	MH455-4A(3.5-4.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-8	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	75.5
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z85061.D	1	10/02/13	ALS	09/24/13	OP69235	EZ4277
Run #2							

Run #	Initial Weight	Final Volume
Run #1	32.1 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	210	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	830	50	ug/kg	
95-48-7	2-Methylphenol	ND	83	47	ug/kg	
	3&4-Methylphenol	ND	83	52	ug/kg	
100-02-7	4-Nitrophenol	ND	410	70	ug/kg	
108-95-2	Phenol	ND	83	43	ug/kg	
83-32-9	Acenaphthene	ND	41	12	ug/kg	
120-12-7	Anthracene	ND	41	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	41	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	41	13	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	41	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	41	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	41	16	ug/kg	
92-52-4	1,1'-Biphenyl	ND	83	4.8	ug/kg	
218-01-9	Chrysene	ND	41	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	41	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	83	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	83	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	83	36	ug/kg	
206-44-0	Fluoranthene	ND	41	18	ug/kg	
86-73-7	Fluorene	ND	41	14	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	41	14	ug/kg	
91-57-6	2-Methylnaphthalene	862	83	23	ug/kg	
91-20-3	Naphthalene	631	41	11	ug/kg	
85-01-8	Phenanthrene	ND	41	19	ug/kg	
129-00-0	Pyrene	ND	41	16	ug/kg	
110-86-1	Pyridine	ND	83	17	ug/kg	
91-22-5	Quinoline	ND	210	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		13-110%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	MH455-4A(3.5-4.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-8	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	75.5
Method:	SW846 8270D SW846 3550C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	74%		15-110%
118-79-6	2,4,6-Tribromophenol	83%		20-123%
4165-60-0	Nitrobenzene-d5	98%		10-110%
321-60-8	2-Fluorobiphenyl	96%		17-110%
1718-51-0	Terphenyl-d14	97%		30-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-4A(3.5-4.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-8	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	75.5
Method:	SW846 8011 SW846 3550B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84376.D	1	10/03/13	AMA	10/02/13	M:OP35073	M:GYZ7322
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.6 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	3.2	1.2	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	128%		61-167%		
460-00-4	Bromofluorobenzene (S)	107%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MH455-4A(3.5-4.0)	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-8	Date Received:	09/20/13
Matrix:	SO - Soil	Percent Solids:	75.5
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	10.6	5.1	0.068	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Lead	8.7	2.1	0.22	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Nickel	21.1	4.1	0.081	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Vanadium	31.7	5.1	0.075	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²
Zinc	60.2	2.1	0.24	mg/kg	1	10/03/13	10/05/13 KK	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA32306

(2) Prep QC Batch: MP75013

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 1

Client Sample ID:	FB09202013	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-9	Date Received:	09/20/13
Matrix:	AQ - Field Blank Soil	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2C112024.D	1	09/30/13	DR	n/a	n/a	V2C5157
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.24	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.23	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.24	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.16	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	0.21	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.35	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.26	ug/l	
110-54-3	Hexane	ND	5.0	0.46	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	0.45	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.19	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		79-117%
17060-07-0	1,2-Dichloroethane-D4	99%		72-123%
2037-26-5	Toluene-D8	96%		82-118%
460-00-4	4-Bromofluorobenzene	89%		75-118%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	FB09202013	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-9	Date Received:	09/20/13
Matrix:	AQ - Field Blank Soil	Percent Solids:	n/a
Method:	SW846 8270D SW846 3510C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M98034.D	1	10/03/13	ALS	09/24/13	OP69236	EM3993
Run #2							

Run #	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	5.1	1.5	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	17	ug/l	
95-48-7	2-Methylphenol	ND	2.0	1.1	ug/l	
	3&4-Methylphenol	ND	2.0	0.93	ug/l	
100-02-7	4-Nitrophenol	ND	10	5.3	ug/l	
108-95-2	Phenol	ND	2.0	1.3	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.27	ug/l	
120-12-7	Anthracene	ND	1.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.46	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.33	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.31	ug/l	
218-01-9	Chrysene	ND	1.0	0.29	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.38	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.56	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.33	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	0.59	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.32	ug/l	
86-73-7	Fluorene	ND	1.0	0.28	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.38	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.39	ug/l	
91-20-3	Naphthalene	ND	1.0	0.26	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.29	ug/l	
129-00-0	Pyrene	ND	1.0	0.27	ug/l	
110-86-1	Pyridine	ND	2.0	0.32	ug/l	
91-22-5	Quinoline	ND	5.1	0.54	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		10-110%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	FB09202013	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-9	Date Received:	09/20/13
Matrix:	AQ - Field Blank Soil	Percent Solids:	n/a
Method:	SW846 8270D SW846 3510C		
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	33%		10-110%
118-79-6	2,4,6-Tribromophenol	96%		29-139%
4165-60-0	Nitrobenzene-d5	103%		28-131%
321-60-8	2-Fluorobiphenyl	94%		30-121%
1718-51-0	Terphenyl-d14	89%		16-147%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	FB09202013	Date Sampled:	09/20/13
Lab Sample ID:	JB48100-9	Date Received:	09/20/13
Matrix:	AQ - Field Blank Soil	Percent Solids:	n/a
Method:	SW846 8011 SW846 8011		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ84389.D	1	10/03/13	AMA	10/03/13	M:OP35070	M:GYZ7323
Run #2							

Run #	Initial Volume	Final Volume
Run #1	35.0 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.015	0.011	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	85%		36-173%		
460-00-4	Bromofluorobenzene (S)	86%		36-173%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: FB09202013	Date Sampled: 09/20/13
Lab Sample ID: JB48100-9	Date Received: 09/20/13
Matrix: AQ - Field Blank Soil	Percent Solids: n/a
Project: Sunoco - Marcus Hook Facility, PA	

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	0.48 U	50	0.48	ug/l	1	09/24/13	09/27/13 GT	SW846 6010C ¹	SW846 3010A ²
Lead	2.4 U	3.0	2.4	ug/l	1	09/24/13	09/27/13 GT	SW846 6010C ¹	SW846 3010A ²
Nickel	1.6 U	10	1.6	ug/l	1	09/24/13	09/27/13 GT	SW846 6010C ¹	SW846 3010A ²
Vanadium	0.72 U	50	0.72	ug/l	1	09/24/13	09/27/13 GT	SW846 6010C ¹	SW846 3010A ²
Zinc	4.4 U	20	4.4	ug/l	1	09/24/13	09/27/13 GT	SW846 6010C ¹	SW846 3010A ²

(1) Instrument QC Batch: MA32252

(2) Prep QC Batch: MP74794

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Chain of Custody (Accutest Labs of New England, Inc.)

2235 Route 130, Dayton, NJ 08810
TEL: 732-329-6200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # JB48100

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)												Matrix Codes	
Company Name STANTEC		Project Name SUNOCO - Marcus Hook		PAPER, SERO (BASE OIL PARAMETERS) FOR CORRECTIVE ACTION LEADED AND UNLEADED GASOLINE AND NO. 2, 4, 5, 6 FUEL OILS												DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank EB-Equipment Blank RB- Rinse Blank TB-Trip Blank	
Street Address 1060 ANDREW DR. SUITE 140		Street WEST CHESTER, PA 19380															
City WEST CHESTER, PA		City WEST CHESTER, PA															
State PA		State PA															
Zip 19380		Zip 19380															
Project Contact JENNIFER MENGES		Project # 213402353															
Phone # 610.840.2500		Client Purchase Order #															
Fax #		Project Manager															
Sampler(s) Name(s) JASON CORREY		Attention:															
LAB USE ONLY																	
Accutest Sample #	Field ID / Point of Collection	MEDICAL Vial #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	DI Water	MICH	ENCORE			
1	MH455-1A(0.0-2.0)	3951/2001	9.19.13	1455	JC	SO	5								X	X	
2	MH455-1A(2.5-3.0)	3953/4001	9.19.13	1505	JC	SO	5								X	X	
3	MH455-2A(0.0-2.0)	4604/4702	9.20.13	0810	JC	SO	5								X	X	
4	MH455-2A(2.75-3.25)	4607/4703	9.20.13	0820	JC	SO	5								X	X	
5	MH455-3A(0.0-2.0)	4665/4705	9.20.13	0905	JC	SO	5								X	X	
6	MH455-3A(5.5-6.0)	4653/5010	9.20.13	0910	JC	SO	5								X	X	
7	MH455-4A(0.0-2.0)	4652/5008	9.20.13	0950	JC	SO	5								X	X	
8	MH455-4A(3.5-4.0)	4658/5009	9.20.13	1000	JC	SO	5								X	X	
9	FB09202013		9.20.13	1025	JC	FB	7	4	1	2					X	X	
Turnaround Time (Business days)		Approved By (Accutest PM): / Date:		Data Deliverable Information												Comments / Special Instructions	
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other _____ Emergency & Rush T/A data available VIA Lablink		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw data		<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format EQWIS <input type="checkbox"/> Other _____												Rec'd at Exton Service Center 9/20/13	
Sample Custody must be documented below each time samples change possession, including courier delivery.																	
Relinquished by: [Signature]		Date Time: 9.20.13/1300		Received By: [Signature]		Date Time: 9/20/13		Relinquished By: [Signature]		Date Time: 9/20/13		Received By: [Signature]		Date Time: 9/20/13		Received By: [Signature]	
Relinquished by: [Signature]		Date Time: 9/20/13/1905		Received By: [Signature]		Date Time: 9/20/13		Relinquished By: [Signature]		Date Time: 9/20/13		Received By: [Signature]		Date Time: 9/20/13		Received By: [Signature]	
Relinquished by: [Signature]		Date Time: 9/20/13		Received By: [Signature]		Date Time: 9/20/13		Relinquished By: [Signature]		Date Time: 9/20/13		Received By: [Signature]		Date Time: 9/20/13		Received By: [Signature]	
Custody Seal #		<input type="checkbox"/> Intact		<input type="checkbox"/> Not Intact		Preserved where applicable		<input type="checkbox"/> On Ice		Cooler Temp. 3.0 C-10							

JB48100: Chain of Custody

Page 1 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB48100 **Client:** _____ **Project:** _____
Date / Time Received: 9/20/2013 **Delivery Method:** _____ **Airbill #s:** _____
Cooler Temps (Initial/Adjusted): #1: (3/3); 0

Cooler Security		Y or N		Y or N	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Cooler Temperature	Y or N
1. Temp criteria achieved:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Cooler temp verification:	IR Gun
3. Cooler media:	Ice (Bag)
4. No. Coolers:	1

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments



Job Change Order: JB48100

Requested Date: 10/18/2013 Received Date: 9/20/2013
Account Name: Stantec Consulting Services Inc. Due Date: 10/4/2013
Project Description: Sunoco - Marcus Hook Facility, PA REDT2
CSR: kristinb TAT (Days): 14

Sample #: JB48100-ALL Change:
Dept: Please relog/retrieve ZN on same report and reissue.

JB48100: Chain of Custody
Page 3 of 3

Above Changes Per: Client / Stephanie Andrews Date: 10/18/2013

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

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www.accufest.com

ACCUTEST <small>LABORATORIES</small>		2235 Route 130, Dayton, NJ 08810 TEL: 732-329-0200 FAX: 732-329-3499/3480 www.accutest.com		FED-Ex Tracking # _____ Accutest Quote # _____		Bottle Order Control # _____ Accutest Job # JB48100		
Client / Reporting Information Company Name: Accutest Laboratories Street Address: 2235 Route 130 City: Dayton State: NJ Zip: 08810 Project Contact: kristinb E-mail: kristinb@accutest.com Phone #: 732-329-0200 Sampler(s) Name(s): JC		Project Information Project Name: Sunoco - Marcus Hook Facility, PA Street: _____ Billing Information (if different from Report to): _____ Company Name: _____ Street Address: _____ City: _____ State: _____ Zip: _____ Attention: _____		Requested Analysis (see TEST CODE sheet)				Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
Accutest Sample # _____ Field ID / Point of Collection _____ MEQ/MDI Val # _____		Collection Date: _____ Time: _____ Sampled by: _____ Matrix: _____ # of bottles: _____		Number of preserved Bottles HCI _____ NaOH _____ HNO3 _____ H2SO4 _____ HNO2 _____ DI Water _____ MEQH _____ ENCORE _____		V8011EDB		
1 MH455-1A(0.0-2.0) 9/19/13 2:55:00 PM JC SO 1 X 2 MH455-1A(2.5-3.0) 9/19/13 3:05:00 PM JC SO 1 X 3 MH455-2A(0.0-2.0) 9/20/13 8:10:00 AM JC SO 1 X 4 MH455-2A(2.75-3.25) 9/20/13 8:20:00 AM JC SO 1 X 5 MH455-3A(0.0-2.0) 9/20/13 9:05:00 AM JC SO 1 X 6 MH455-3A(5.5-6.0) 9/20/13 9:10:00 AM JC SO 1 X 7 MH455-4A(0.0-2.0) 9/20/13 9:50:00 AM JC SO 1 X 8 MH455-4A(3.5-4.0) 9/20/13 10:00:00 AM JC SO 1 X 9 FB09202013 9/20/13 10:25:00 AM JC AQ 1 X						LAB USE ONLY 222 2F		
Turnaround Time (Business days) _____		Data Deliverable Information _____		Comments / Special Instructions _____				
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other _____		Approved By (Accutest PM): / Date: _____ _____ _____ _____ _____		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input checked="" type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw data		<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format _____ <input type="checkbox"/> Other _____		
Emergency & Rush VA data available VIA Lablink		Sample Custody must be documented below each time samples change possession, including courier delivery.						
Relinquished by Sampler: [Signature] Date Tin: 9-23-13		Received By: FEDEX Date Time: _____		Relinquished by: FEDEX Date Time: 9-24-13		Received By: Way Date Time: _____		
Relinquished by Sampler: _____ Date Time: _____		Received By: _____ Date Time: _____		Relinquished by: _____ Date Time: _____		Received By: _____ Date Time: _____		
Relinquished by: _____ Date Time: _____		Received By: _____ Date Time: _____		Custody Seal: [Signature] <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable: _____ On Ice: 09-27-07 Cooler Temp: _____		

JB48100: Chain of Custody
Page 1 of 2
Accutest Labs of New England, Inc.

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB48100 **Client:** ACNJ **Immediate Client Services Action Required:** No
Date / Time Received: 9/24/2013 **Delivery Method:** **Client Service Action Required at Login:** No
Project: SUB **No. Coolers:** 1 **Airbill #'s:**

Cooler Security **Y or N** **Y or N**
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK ☒ ☐

Cooler Temperature **Y or N**
1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Infrared gun
3. Cooler media: Ice (bag)

Quality Control Preservation **Y** **or** **N** **N/A**
1. Trip Blank present / cooler: ☐ ☐ ☒
2. Trip Blank listed on COC: ☐ ☐ ☒
3. Samples preserved properly: ☒ ☐
4. VOCs headspace free: ☐ ☐ ☒

Sample Integrity - Documentation **Y or N**
1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition **Y or N**
1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

Sample Integrity - Instructions **Y** **or** **N** **N/A**
1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume recvd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

Comments